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## Hospitalizations Due to Motorcycle Crash Injuries — Alaska, 2001–2010

### Background

Since 2000, motorcycle-related deaths have increased nationally by 55%.<sup>1</sup> In 2010, 14% of all road traffic deaths in the United States and 16% in Alaska were among motorcyclists and passengers.<sup>1-2</sup> National studies have shown that helmets are estimated to reduce the likelihood of head injury in a motorcycle crash by 69% and the likelihood of death by 37%; however, fewer than half of all states have adopted a universal helmet law.<sup>1,3</sup> While Alaska does not have a universal helmet law, helmets are required for motorcyclists aged <18 years, all passengers, motorcyclists with an instruction permit, and motorcyclists taking a road test.<sup>4</sup>

### Methods

Motorcycle crash injury hospitalization data from 2001–2010 were obtained from the Alaska Trauma Registry (ATR) using E-codes 810–819 for injuries involving motorcyclists and passengers (fourth digit subdivisions: “.2” for *motorcyclist* and “.3” for *passenger on a motorcycle*). Crude rates were calculated using the Alaska Population Estimates data. Relative risks (RR) and 95% confidence intervals (CI) were calculated using the crosstab function in SPSS version 18.

### Results

During 2001–2010, the ATR captured 745 motorcycle crash injury hospitalizations, which accounted for 13% (745/5,816) of all recorded motor vehicle traffic accident injury hospitalizations in the registry. The median age of hospitalized persons was 40 years (range: 9–85); 636 (85%) were male, 575 (80%) were White, and 670 (90%) were Alaska residents; 400 (54%) were wearing a helmet, and 135 (22%) were wearing other protective clothing. The mean annual number of hospitalizations was 75 (range: 51–91).

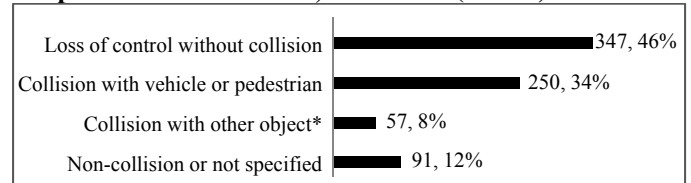
Of the 745 hospitalizations,

- loss of control without collision was the most frequent injury characteristics (Figure);
- 600 (81%) occurred during May–August;
- 192/555 (35%) occurred between 4:00 pm and 8:00 pm;
- 92 (12%) were suspected or proven to have been associated with alcohol, and 74 (10%) were associated with illicit drug use;
- 368 (49%) involved injuries classified as minor or moderate, 353 (47%) were serious, severe, critical, or maximal, and 24 (3%) were not assigned an abbreviated injury severity score;
- 515 (69%) involved a primary diagnosis of fracture(s);
- 140 (19%) involved care in an intensive care unit;
- 192 (26%) involved a traumatic brain injury (TBI);
- 41 (6%) died while hospitalized;
- 4,485 hospital days were recorded (median: 3 days per hospitalization, maximum: 139 days); and
- hospital charges totaled \$29 million (median: \$17,274/hospitalization, maximum: \$632,790) excluding long-term care, disability rehabilitation, and other indirect costs such as loss of wages.

During 2001–2010, the average annual crude rate for motorcycle crash injury hospitalizations was 11.1 per 100,000 persons. Crude rates by age were highest among adults aged 20–29 years and 50–59 years (16.1 and 16.7 per 100,000 persons, respectively); crude rates were lowest among persons aged ≤19 years and ≥60 years (10.3 and 10.7 per 100,000 persons, respectively). Crude rates were highest in the Gulf Coast, Northern, and Anchorage Mat-Su regions (Table).

The risks of TBI and death were significantly higher among patients who were not wearing a helmet compared to those who were wearing a helmet (RR<sub>TBI</sub>=1.7, 95% CI=1.31–2.14; RR<sub>Death</sub>=2.3, 95% CI=1.20–4.40).

**Figure. Frequent Characteristics of Motorcyclist Injury Hospitalizations — Alaska, 2001–2010 (N=745)**



\*E.g., animal, traffic sign, highway structure, fallen stone

**Table. Motorcycle Crash Injury Hospitalization Rates, by Region — Alaska, 2001–2010 (n=703)<sup>†</sup>**

Region	Number (%)	Rate per 100,000
Anchorage/Mat-Su	352 (49%)	9.9
Gulf Coast	119 (17%)	15.7
Interior	156 (22%)	2.1
Northern	26 (4%)	10.8
Southeast	39 (5%)	5.5
Southwest	11 (2%)	2.8

<sup>†</sup>Region-specific data were not available for 42 cases.

### Discussion

This report indicates that from 2001–2010, persons hospitalized in Alaska due to a motorcycle crash injury were 70% more likely to incur a TBI and 2.3 times more likely to die if they were not wearing a helmet when they crashed. Hospitalization rates were highest among adults aged 50–59 years and persons living in the Gulf Coast and Northern regions, and hospital charges alone totaled almost \$30 million. Of note, this report does not include data on motorcycle crash victims who died at the crash scene or prior to hospital arrival.

Alaska has conditions that make motorcycle riding more dangerous than in most other states because Alaska pavements often exhibit frost heaves and large cracks due to permafrost, and the lower sun angle and long periods of twilight can create several hours per day where shadows may obscure a motorcyclist.<sup>5</sup> Additionally, longer periods of daylight during the summer months may make prolonged travel more tempting, increasing the potential for driver fatigue.

Health care providers should educate patients who ride motorcycles about the importance of always using properly fitting helmets and protective clothing, and the effects of fatigue and alcohol on driver performance. Educational materials are available online.<sup>3</sup>

### References

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